

# THE LANGURS, OR LEAF MONKEYS, OF BRITISH INDIA

BY

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(With 1 coloured and 1 black and white plate and 21 text figures)

## THE DIFFERENCES BETWEEN THE LANGURS AND THE MACAQUES

Although the name Langur is, strictly speaking, the Hindi title for certain Monkeys restricted to the northern parts of India, it has been extended during recent years to include a great variety of related forms widely distributed in the East. In this paper I have adopted it for all the eastern monkeys which are not Macaques.

The Langurs are found, mostly in thickly forested districts, throughout British India from Kashmir and Upper Burma in the north to Ceylon and Tenasserim in the south. Outside that area they extend into southern China and Siam and through the Malay Peninsula to Borneo. There are several genera; but the only one which, as occurring within the British area, concerns us at the present time, is the genus now called *Pithecus*, which was formerly better known as *Semnopithecus* or *Presbytis*.

Except where regarded as sacred and encouraged to enter native villages, Langurs avoid the presence of man and are essentially dwellers in the tree-tops, feeding mainly upon leaves, shoots and buds and, in case of alarm, passing from branch to branch with prodigious leaps or swinging from one branch to another by means of their arms somewhat after the manner of Gibbons. They are less terrestrial and more arboreal than the Macaques and differ from them also in diet. And the differences in these respects between these two groups of monkeys are accompanied by important structural modifications connected with the digestive organs and limbs. The Macaques have large cheek-pouches and a comparatively small, simple stomach, whereas in the Langurs there are no cheek-pouches and the stomach is capacious and sacculated. In the second place the hands and feet of the Macaques are shorter and broader than in the Langurs and have a larger thumb and great toe. (Text figs. 1A, 1B, 2A, 2B, 3A and 3B.)

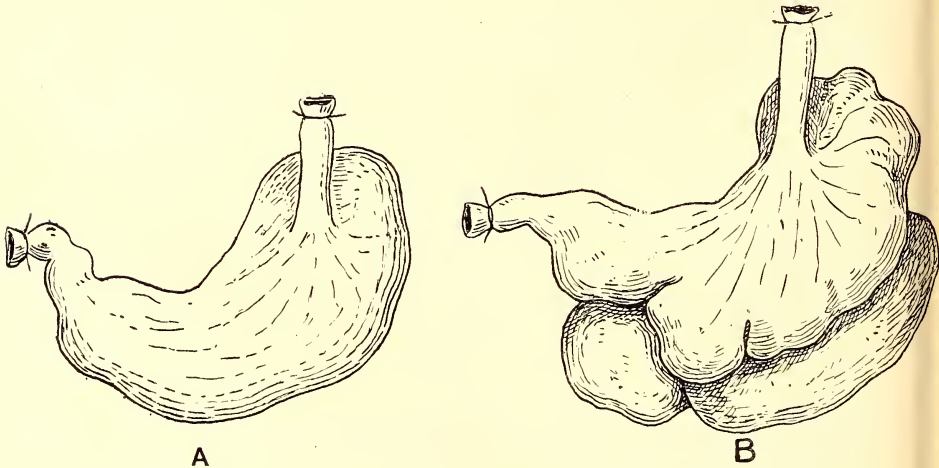


FIG. 1.—A. Simple stomach of the Common Macaque (*Macaca irus*) from the Malay Peninsula.

B. Sacculated stomach of Ceylonese Langur (*Pithecus senex vetulus*).

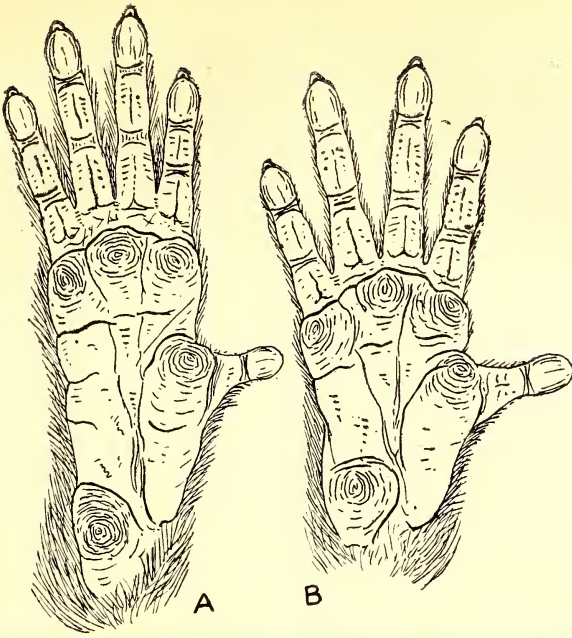


FIG. 2.—A. Hand of Indian Langur (*Pithecus entellus*). Half nat. size.  
 B. Hand of Malabar Macaque (*Macaca silenus*). Half nat. size.

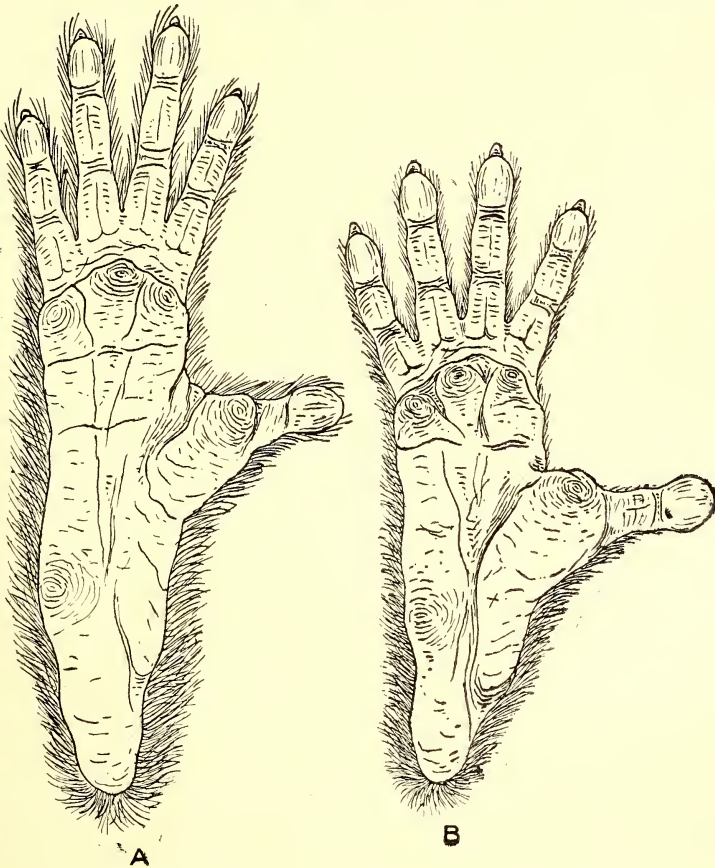


FIG. 3.—A. Foot of Indian Langur (*Pithecus entellus*). Half nat. size.  
 B. Foot of Malabar Macaque (*Macaca silenus*). Half nat. size.

These differences are expressed by referring the Macaques and Langurs to two distinct families, the Macaques to the *Cercopithecidae*, which also includes the Baboons, Mangabeys, and some other African Monkeys, and the Langurs to the *Colobidae*, which also includes the Guerezas (*Colobus*) of Central Africa.

#### THE CLASSIFICATION OF THE LANGURS

For the original descriptions of the Langurs of British India we are indebted to many authors, more particularly to Blyth; but the most important attempt to deal with them comprehensively was made by Anderson, who not only had in his hand Blyth's specimens in the Calcutta Museum, but also made a point of seeing, where possible, the specimens described by French, Dutch and other foreign zoologists and preserved in the Museums of various countries in Europe. This work which is a monographic revision of all the species of Langurs, then called *Semnopithecus*, known up to that time, was published in 1878 in the *Zoological Results of the two Expeditions to Western Yunnan*. It was an important treatise and formed the basis of Blanford's account of the Langurs contained in his classic volume of the *Mammals of British India*, published in 1891, and of Forbes's account of these monkeys in vol. ii of his *Handbook of the Primates*, 1894. But the arrangement and treatment of the species in the three volumes cited does not attest any clear understanding of their mutual affinities on the part of the authors; and this statement is still more true of Elliot's classification of the Langurs contained in vol. iii of his *Review of the Primates*, published as recently as 1913.

On working through the collection in the British Museum, I find evidence that the Langurs of the genus *Pithecus* may be divided primarily into three groups sharply distinguishable by the colour of the newly-born young; and this character is sometimes correlated with others in the skull, coloration or other external features of the adult which make it possible to assign with some degree of assurance to one or the other of the groups those species in which the coloration of the young has not as yet been ascertained.

These groups may be defined as follows:—

*Group I.*—Newly born young, a uniform dark blackish-brown all over. (Plate I, fig. 3).

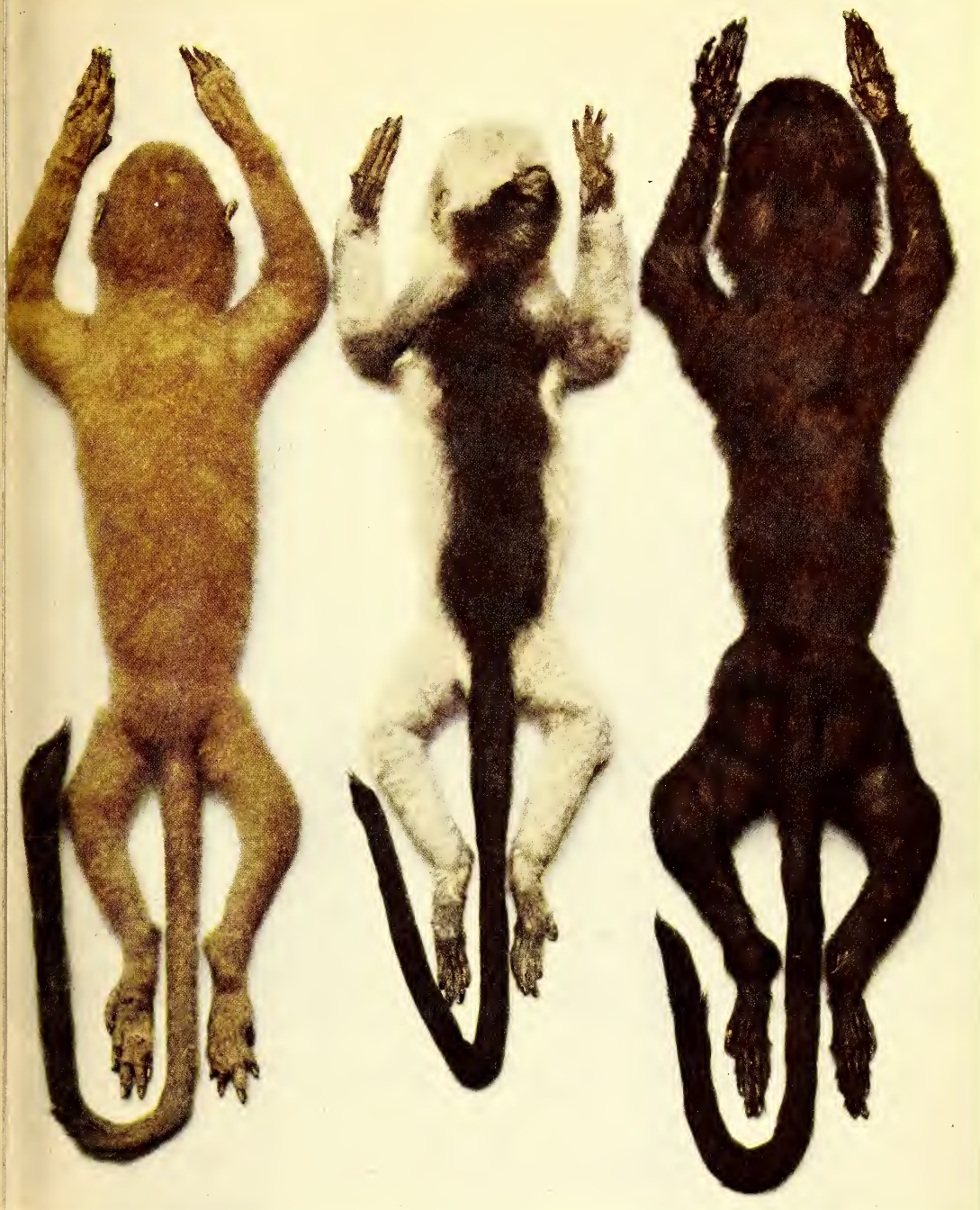
This group, which may be called the *Entellus*-group, since the *Entellus* Langur is the best known species contained in it, is restricted to India and Ceylon and ranges in suitable localities throughout those countries from the Himalayas southwards but does not, so far as is known, cross the Brahmaputra. All the known Langurs of this group are discussed in this paper. I refer them to two well-defined species, *Pithecus entellus* and *Pithecus senex*, each of which is represented by several local races or subspecies. The colour of the young has not been recorded, so far as I am aware, in the typical form of either of these; but it is known in the subspecies *dussumieri* and *achates*, which are admittedly closely related to typical *entellus*, and in the subspecies *johnii* which is admittedly closely related to typical *senex*.

*Group II.*—Newly born young, a uniform golden or orange red all over. (Plate I, fig. 1).

This group, which may be called the *Auratus*-group after one of its earliest known species, ranges from Assam, Upper Burma and Siam southwards through the Malay States, Sumatra, Java and Borneo. So far as British India is concerned it is represented by two distinct species, *Pithecus pileatus* found in Assam and other districts near at hand, and *Pithecus auratus* which, as here understood, extends from Upper Chindwin to Southern Tenasserim. Both these species are represented within the British Indian area by several local races.

*Group III.*—Newly born young parti-coloured, white below, on the sides of the body, the legs and the forepart of the head, but with a blackish or dark brown spinal stripe of varying width extending from the back of the head on to the tail and usually at all events spreading more or less on to the outer side of the arms. (Plate I, fig. 2).

This group I call the *Aygula*-group, from the oldest known species belonging to it. Containing several distinct species and subspecies in Borneo, Java, Sumatra and the Malay Peninsula, this group is more southern in its distribution than the *Auratus*-group and only just enters our area in South Tenasserim where it is represented by *Pithecus femoralis*, a species well known in the Malay Peninsula.



1

2

3

NEWLY-BORN LANGURS

1. *The Auratus-Group.*

2. *The Aygula-Group.*

3. *The Entellus-Group.*



My conclusions regarding the numbers of different kinds of Langurs occurring in British India and concerning the importance of the differences between them vary considerably from those of my predecessors. It is needless here to enter into the details of this subject since they are set forth in the following pages; but it must be explained that the divergence of opinion is due mainly to two things. In the first place, I use the word 'species' in a much wider and more comprehensive sense than that adopted by those who determined the langurs collected by the Mammal Survey, a great many of the forms they considered as species being regarded by me as subspecies or local races. In the second place, as compared with the pioneer workers, Blyth, Anderson and Blanford, I have had the advantage of most of the splendid material collected by the Mammal Survey, organized by the Bombay Natural History Society. Where the authors mentioned had only one or two, probably badly preserved skins and a few skulls to guide them, I have had several, in some cases a dozen or more properly prepared, measured and dated skins, from various localities, with skulls to match.

This material has revealed greater individual variation, especially perhaps in the skulls, than was formerly supposed to exist; and it has established the occurrence of a number of local races or subspecies linking forms to which, in the absence, or rather ignorance, of intergrading types, full specific rank was by common consent formerly accorded.

Although the material collected by the Survey has vastly extended our knowledge of the Langurs of British India, it cannot be claimed that it has made easier the task of naming them. It has, indeed, greatly increased the difficulty of constructing analytical keys to facilitate their determination because it has shown the impossibility of assigning definite and constant characters to all the named representatives of this group. There is still much to be learnt about them. Further collections in areas not yet investigated, like the eastern parts of India from Orissa to south of Madras, will almost certainly bring to light new local races and will perhaps show that some of the forms here nominally distinguished are based upon characters not deserving that distinction. For the most part I have had several specimens to guide me; but in others I have been compelled to rely upon a single locally isolated example; and in cases where I have given a name to one or two such examples, it has been to draw especial attention to some particular character of interest, although of doubtful systematic value.

SYSTEMATIC ACCOUNT OF THE SPECIES AND SUBSPECIES

The characters of the three groups above described into which the Langur of British India fall may be expressed analytically as follows:—

- (a) Newly born young uniformly coloured above and below; never more than one frontal whorl in the hair on the head; nasal bones in the skull not convexly bulging below the brow.
- (b) Newly born young uniformly blackish brown. (Himalayas to Ceylon) ... *Entellus*-group.
- (b<sup>1</sup>) Newly born young uniformly golden yellow or golden red. (Assam to Tenasserim) ... *Auratus*-group
- (a<sup>1</sup>) Newly born young particoloured, white with a black or brown spinal stripe from the head to the tail tip; a pair of frontal whorls; nasal bones convexly bulging below the brow. (S. Tenasserim) *Aygula*-group.

I. The ENTELLUS-group.

Characters as set forth above.

The Langurs of this group were referred by Blanford and other authors to six or seven or even more species. But that method of treating them does not express their true affinities. They are very obviously assignable to two categories to which I give specific rank and their characters may be contrasted as follows:—

- (a) A single whorl or parting on the forehead behind the brow; hair of the loins not shorter than elsewhere on the back; lower side of the body paler than the upper; skull with prominent brows, the plane of the orbit sloping downwards and backwards from its upper to its lower rim ... *entellus*.

- (a<sup>1</sup>) No whorl on the forehead ; hair on the loins, or croup, shorter than on the back and typically paler ; lower side of the body approximately the same colour as the upper ; skull with less prominent brows, the plane of the orbit sloping downwards and forwards from its upper to its lower rim ... .. *senex*.

1. *Pithecus entellus*, Dufresne.

*Simia entellus*, Dufresne *Bull. Soc. Phil.*, Paris, i, p. 49, 1797.

It is needless to repeat the distinguishing characters of this species as stated above. It is also needless to quote more than the original reference to the name, because I use the specific title in a much more comprehensive sense than my predecessors to embrace the Langurs assigned by Blyth, Anderson, Blanford and other authors to several distinct species, *schistaceus*, *entellus*, *hypoleucus*, *anchises* and *priam*, all of which, with the possible exception of *anchises*, I regard merely as local races or subspecies of a single species for which *entellus* appears to be the oldest name available.

*Distribution.* North of the Ganges from Kashmir to Sikkim, possibly to Bhutan, and south of the Ganges from Cutch and Kathiawar to Bengal, thence southwards into northern Ceylon.

KEY TO THE SUBSPECIES OF *P. entellus*

- (a) Whiskers long and thick, mostly or completely hiding the ears ; head and whiskers uniformly whitish or pale buff and contrasted with tint of back. (N. of Ganges).
- (b) Coat long, shaggy and mane-like ; arms below elbows black and strongly contrasted with colour of body ... .. *ajax*.
- (b<sup>1</sup>) Coat shorter, not shaggy and mane-like ; arms and hands not black and not sharply contrasted with colour of body.
- (c) General colour dark earthy-brown ; coat thick and woolly ... .. *achilles*.
- (c<sup>1</sup>) General colour paler, slaty or greyish-buff ; coat shorter and less woolly.
- (d) Skull larger, with prominent nasal region and larger teeth ... .. *hector*.
- (d<sup>1</sup>) Skull smaller, with less prominent nasal region and smaller teeth ... .. *schistaceus*.
- (a<sup>1</sup>) Whiskers shorter, not or only partly hiding ears ; head and whiskers variable but never so white and strongly contrasted as in section (a) (S. of Ganges).
- (e) Hands and feet black and generally sharply contrasted with the arms and legs.
- (f) Crown of head at most only a little paler than nape and shoulders ; hands and feet black or brown and typically sharply contrasted with arms and legs ... .. *entellus*.
- (f<sup>1</sup>) Crown of head clearly defined from the shoulders and back by its paler tint.
- (g) No tuft on crown ; upper portion of whiskers typically clouded with black.
- (h) Paler ; crown of head uniformly buffish in tint ; tail and outside and inside of legs below knees not black.
- (i) Arms below elbows not black, contrasted with the hands ... .. *achates*.
- (i<sup>1</sup>) Arms below the elbows black, blending with tint of hands.

- (j) Paler; cheeks pale like the crown ... .. *dussumieri*.  
 (j<sup>1</sup>) Darker; upper part of cheeks blackish ... .. *ulus*.  
 (h<sup>1</sup>) Darker; crown of head suffused with dark hairs; tail and outside and inside of leg below knee black.  
 (k) Not so dark above or below; inner side of thigh clothed with white hairs; size smaller *hypoleucos*.  
 (k<sup>1</sup>) Darker above and below; inner side of thigh mostly clothed with black hairs; size larger ... .. *eneas*.  
 (g<sup>1</sup>) A tuft on the crown; upper portion of whiskers pale like the crown ... .. *elissa*.  
 (e<sup>1</sup>) Hands and feet not black, practically uniform in colour with the arms and legs.  
 (l) Crown of head pale, like the cheeks, and contrasted with back; no tuft; size smaller *priamellus*.  
 (l<sup>1</sup>) Crown of head typically darker than cheeks, hardly contrasted with back, and typically tufted; size larger ... .. *pallipes*.

In the construction of this key, my aim has been the juxtaposition of what appear to be related forms, although it would perhaps have been easier to make a frankly artificial analytical table by the rearrangement of the characters employed. But the actual or probable occurrence of intergrading specimens, it must be remembered, makes the construction of such keys difficult and their use somewhat unsatisfactory. Also it must be remembered that the distinctive features of *dussumieri* and *hypoleucos*, which I have not seen, have been inferred from the descriptions of authors and that the form, also unknown to me, named *anchises* by Blyth, which in the tint of its hands and feet is intermediate between *e* and *e*<sup>1</sup>, has been omitted.

Subspecies *schistaceus* Hodgson.

*Semnopithecus schistaceus*, Hodgson, *Journ. As. Soc.*, Bengal, ix, p. 1212, 1841.

*Semnopithecus nepalensis*, *id. ibid.*

Not *Semnopithecus schistaceus* of Blanford, Anderson and other authors, or at least only in part.

Dark slaty above; below and entire head pale yellow; hands and feet somewhat darkened; concolorous. Hair of one sort, more or less wavy. Head and body, 30 inches; tail, 36 inches; hind foot, 8½ inches.

*Distribution.* Nepal; the Terai Forest.

The description of this race given above is taken from Hodgson's original diagnosis which, as indicated by the measurements, was based in all probability upon an adult male. It is important to remember this because the description cannot be applied to the adult males of any of the Himalayan Langurs in the collection of the British Museum.

This series comprises several examples belonging to Hodgson's collection which are ticketed Nepal. No doubt Hodgson regarded them as specifically identical with the form he described as *schistaceus*; but by no stretch of the imagination can they be described as 'dark slaty above.' They are most emphatically brown, without any perceptible trace of dark, or even light, grey to justify the epithet 'slaty.' Moreover, the available evidence suggests that these brown langurs, as stated below, live at high altitudes in Nepal and possibly Sikkim. There is at all events no evidence that I can find of their occurrence at the relatively low level of the Terai Forest; and this was the opinion of Blanford, who supposed the langurs of the Terai to be typical *entellus* and thus rejected Hodgson's original locality for *schistaceus*.

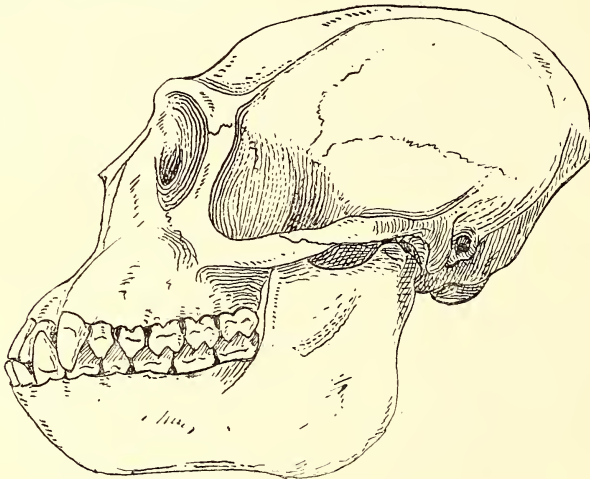
The only specimen in the British Museum that was shot at a low level in Nepal is a female procured for the Mammal Survey by N. A. Baptista at Hazaria



Pathergatti at an altitude of 300 feet. This has the clearly defined pale head, the yellowish tinted under side and the uniform coloration of the upper side of the body and outside of the limbs described by Hodgson for *schistaceus* and Hinton and Fry<sup>1</sup> identified it as that form, probably quite correctly. It cannot, it is true, be accurately described as 'dark slaty above,' because the tint of the upper side is pale and greyish-buff. The animal, however, is a female giving the following approximate measurements in inches :—Head and Body, 23 ; Tail, 36 ; Hind foot,  $7\frac{1}{2}$  ; Ear,  $1\frac{1}{2}$  ; and since the skull, although the teeth are fully up and even worn, has the occipital suture open, the langur was probably not quite full-sized and might well represent the female of *schistaceus* on the assumption that Hodgson's type of *schistaceus* was a male.

This skull is of particular interest because it is intermediate between the skulls of typical *entellus* of the low levels of Bengal and those of the large langurs described below which inhabit the Himalayas at higher altitudes and have always, but wrongly, been regarded as true *schistaceus*. Its measurements in millimetres are as follows :—Total length, 115 ; length of palate, 41 ; of upper molars, 34 ; width across orbits, 64 ; across zygomata, 82. (Text fig. 4 B.)

It will thus be seen that it is noticeably smaller than the skulls of females of the races from Chamba, Kumaon and Sikkim and has smaller teeth. On the other hand, it hardly differs in these respects from the skulls of some examples of *entellus*, although the face is more sloped and less vertical than in average examples of that race owing to slightly greater prominence of the jaws, but the suborbital area of the face does not recede more than it does in many examples of *entellus*. The brow ridges are prominent and in the middle line rise vertically above the base of the nasals.



B

FIG. 4B.—Skull of *Pithecus entellus schistaceus* from Hazaria Pathergatti in the Nepal Terai, ♀ subadult. Two-thirds nat. size.

Subspecies *achilles*, nov.

(Plate II, fig. 2.)

*Semnopithecus schistaceus*, Anderson, Blanford, Elliot and other authors, at least in part.

Not *S. schistaceus*, Hodgson, 1841 (cf. *supra*).

Distinguishable from *schistaceus* by the nearly uniform chocolate or dusky sepia brown colour of the upper side of the body, the tail and the outside of the limbs. The upper surface, however, has a paler brown or buff sheen in

<sup>1</sup> *Jour., Bomb. Nat. Hist. Soc.*, vol. xxix, No. 2, p. 404, 1923,



1. THE KANGRA LANGUR (*P. entellus ajax*)
2. THE NEPAL LANGUR (*P. entellus achilles*)
3. THE COMMON LANGUR (*P. entellus entellus*)



reflected light, the tip of the tail is sometimes pale and the hands and feet are sometimes patched with black. Head and nape of neck and whiskers cream or dirty white and contrasted with the brown hue of the shoulders. The lower side and the inner surfaces of the limbs whitish, sometimes tinged with buff.

Coat full, thick and long, but not markedly shaggy, the hairs being tolerably uniform in length and generally more or less wavy especially on the head.

*Type.* Adult male from the Saththar Hill (12,000 feet) in Gorkha, Nepal.

*Distribution.* Nepal at high altitudes; and possibly Sikkim.

The only specimen certainly assignable to this race in the British Museum which is labelled with full particulars is the type mentioned above, an adult male shot for the Mammal Survey by N. A. Baptista at an altitude of 12,000 feet on Saththar Hill, Gorkha, about 50 miles north-west of Khatmandu. Its approximate measurements in inches are as follows :—

Head and Body	Tail	Hind Foot	Ear
30	36½	8¾	1¼

These dimensions correspond tolerably closely with those recorded by Hodgson for *schistaceus* and with those of the males of the local race from Chamba and Kangra described below.

The skull, too, although somewhat flatter along the top, is very like the skulls of that subspecies, as the following dimensions in millimetres show :—

Total length	Length of Palate	Length of Upper Molars	Orbital width	Zygomatic width
147	57	38	84	108

In addition to the type, the British Museum possesses several skins of this race belonging to Hodgson's collection and ticketed Nepal. These, referred to above under *schistaceus*, have always been regarded as *schistaceus*. No doubt they were considered to be identical with it by Hodgson himself and also by Blanford who saw them. No doubt, too, they are the specimens, or some of the specimens, which induced Blanford to describe *schistaceus* as 'earthy or greyish-brown.' Earthy-brown describes them well; but there is no grey in the pelage of the upper side of the body. Blanford, however, like Anderson, used the title *schistaceus* in a comprehensive sense for all the big langurs living at high altitudes in the Himalayas.

This race may also occur in Sikkim. There is at all events in the British Museum a skin, alleged to have been collected in Sikkim by Mandelli, which is in all important respects like the type and like Hodgson's specimens. Moreover, Elliot's description of *schistaceus* which he said was 'mars brown' above, was taken from a specimen in the Calcutta Museum ticketed Sikkim. And since many of Hodgson's specimens ticketed Nepal came, as Hinton has shown, from Sikkim, Hodgson's examples of *achilles* referred to above, may have come from the latter country.

The available skull material of *achilles* is unfortunately scanty. Setting aside the skull of the type, perhaps the most important is that of a young female belonging to one of Hodgson's specimens. A comparison between this skull and that of the female described above as *schistaceus* is interesting. It is much younger as is shown not only by the distinctness of its sutures but more particularly by the state of its dentition, the upper canine and last upper molar only just appearing above the bone of the jaw, both being probably covered by the gum when the monkey was alive. Nevertheless its measurements in millimetres are as follows :—Total length, 112; length of palate, 40; of upper molar series, 37; width across orbits, 69; across zygomata, 85. Thus it is wider across the eyes and temples, has larger teeth and as long a palate, and

although a trifle shorter owing to the lesser development of the occiput, it would certainly have exceeded the length of the skull of *schistaceus* with growth. The profile too is very different and recalls that of the skull of the female of the race from Kumaon, described below, in the prominence of the nose and the receding brow.

Of Langurs from Kashmir there is very little material in the British Museum, namely two skins only. These, however, appear to be identical with the Nepal form *achilles*. This is perhaps surprising considering the difference between *achilles* and the Langur of Chamba and Kangra described below.

I provisionally refer to *achilles* four skins from Sikkim which are a little paler and greyer than skins from Nepal, but like them in the length and texture of the winter coat. The dimensions of three out of these four female specimens, collected in December and January for the Mammal Survey by Mr. C. A. Crump, are as follows :—

Locality	Head & Body	Tail	Hind foot	Ear	Weight
Chautang, 5,350 ft. ♀ ... ..	26½"—	33"—	8"—	1¾"	...
Lachen, 8,800 ft. ♀ ... ..	25"—	28"—	7½"	1¾"	35 lbs.
Chautang, 5,356 ft. ♀ ... ..	24"—	30¼"	8"	1¾"	...

The only available adult skull is defective, one side of it having been shot away. It is a little lower in its facial portion than the female skulls of *hector* and *ajax*, but this may be an individual peculiarity because otherwise it is very similar, except that the nasal region is less prominent than in *hector* and like that of the Kangra examples of *ajax*. Its total length is 125 mm., and the upper molar and premolar teeth measure 38 mm.

This is probably the Langur which has previously been recorded from Sikkim as *schistaceus*. But, as stated above, there is in the British Museum a skin labelled Sikkim which was collected by Mandelli and presented by Blanford. But this skin is racially indistinguishable from Nepalese skins of *achilles*; and since, according to Blanford, Mandelli's localities are not trustworthy, it is not improbable that the skin in question came from Nepal and not from Sikkim. And the same may be said of the example of *achilles* in the Calcutta Museum from Sikkim which Elliot described as *schistaceus*.

A distinguishable Himalayan race closely allied to *P. entellus achilles* has been described and may here be mentioned, although it does not, so far as is known at present, occur within the area of British India.

This is :—

Subspecies *lanius*, Elliot.

*Presbytis lania*, Elliot, *Ann. Mag. Nat. Hist.* (8), iv, p. 273, 1909; *id. Rev. Primates*, iii, p. 93, 1913 (under *Pygathrix*).

Colour very like that of typical *achilles* from Nepal but with a slightly greyer sheen especially on the loins and hind legs, and with more white on the back of the thighs. The coat is a little longer, thicker, softer and more wavy.

*Distribution.* Chumbi in Tibet, 10,000 feet.

The dimensions in inches of the single female specimen collected by Major F. M. Bailey are as follows :—

Head and body 25; hind foot 7½; ear 1¾.

The skull, which I have not seen, measures, according to Elliot, 125 mm. in total length, and the zygomatic breadth is 102 mm.

Subspecies *ajax*, nov.

(Plate II, fig. 1.)

*Pithecus entellus*, Lindsay, *Journ. Bomb. Nat. Hist. Soc.*, xxxi, p. 599, 1926 (not *P. entellus*, Dufresne.)

A big handsome langur as large as *achilles* but differing in the colour and texture of its coat. The general colour of the upper side is dusky brownish-grey, much greyer than in *achilles*, with the whitish cap on the crown typically less distinctly defined owing to a greyish tinge on the nape blending more or

less with that of shoulders ; the arms below the elbows and the hands are black or blackish brown in adults and the legs paler greyish-brown, darkened with sooty grey on the thigh and knee in front, the feet at most a little darker than the area below the knee, with the foot bordered externally with white and some whitish hairs on the toes. The whiskers and throat, the under side of the body, the inside of the limbs and the backs of the thighs, and as much as four inches of the tip of the tail are white.

The coat is loose and shaggy, forming a kind of mane over the shoulders and upper part of the arms and on the flanks, and consisting largely of long greyish white glistening hairs such as are seen in typical *entellus*.

*Type.* Adult male from Deolah, Chamba, 6,000 feet (H. W. Wells).

*Distribution.* Northern Punjab ; Chamba, from 6,000 to 7,500 feet ; Kangra, from 2,450 to 9,500 feet ; Kulu, from 9,800 to 11,000 feet.

Young specimens differ considerably from adults in being much paler in colour both on the back and on the arms, and the coat consists of long thick more woolly hair, the coarser glistening hairs of the coat of the adult being practically absent. The examples from Chamba were collected in December and January by H. W. Wells. Those from Kangra, procured in March and April, differ in having the pale cap on the head more clearly defined and in having the arms browner. Three females from Kulu, collected in June, still carry the winter coat but it is very shaggy and wavy. These specimens also have paler arms. Such differences as those observed between the Chamba, Kangra and Kulu individuals are probably seasonal.

The following are the approximate measurements in inches of some selected individuals :—

Locality and Sex	Head and Body	Tail	Hind foot	Ear	Weight
Chamba, Deolah, 6 000 ft., ♂ ...	30"	38"	9"	2"	..
" , Bara Tissa, 7,500 ft., ♂ ...	30"	32"	8"	2"	43 lbs.
" , Chalan Tissa, 6,700 ft., ♂..	30"	33"—	9"	2"	...
Kangra Fort, 2,450 ft. ♂ ...	31"	34½"	8½"	1½"	46 lbs.
" , Chicaian, 9,000 ft., ♀ ...	27"	28½"	8½"	1½"	28 lbs.
" , Samyala, 9,500 ft., ♀ ...	23"—	34"	7"	1½"	...
Kangra, 2,400 ft., ♀ ...	...	24"	33"	7½"	1½"
Kulu, Rahla 9,800 ft. ♀ ...	...	21"—	31"	7"	1½"
" , " , " , ♀ ...	...	20"	30½"	7"	1¾"

The skulls (Text fig. 5A.) do not differ in any important points from those of *achilles*, as represented by the one from Gorkha and the fragments of those collected by Hodgson referred to above. The following table shows their dimensions in millimetres :—

Locality and Sex	Total length	Length of Palate	Length of Upper Molars	Orbital width	Zygomatic width
Chamba, ♂ ...	147	57	41	84	111
" , ♂ ...	145	54	40	82	111
" , ♂ ...	141	54	40	84	109
Kangra, ♀ ...	144	54	41	84	109
" , ♀ ...	124	46	40	72	94
" , ♀ ...	120	43	40	73	94

Subspecies *hector*, nov.

*Presbytis schistaceus*, Wroughton, *Journ., Bom. Nat. Hist. Soc.*, xxiii, p. 286, 1914 (not *P. schistaceus*, Hodgson).

Approximately the same size as *achilles* and *ajax* but differing from both in colour and in the shortness of the hairs of the winter coat. General

colour slaty-grey tinged with buff or pale brown ; the outside of the arms grey below the elbow and a little darker than the back, but not nearly so dark as in *ajax* ; the outside of the legs paler than the back and with a sooty grey tint on the thigh in front. The white cap on the head and nape sharply defined and the under side either dirty white or more frequently suffused with buff or pale red. The winter coat consisting of hairs of tolerably uniform length, shorter than in *achilles* and not so thick and very much shorter than in *ajax*.

*Type.* Male (skin and skull) from Sitabani, Ramnagar, Kumaon, 2,000 feet. B. M. No. 14.7.10.10.

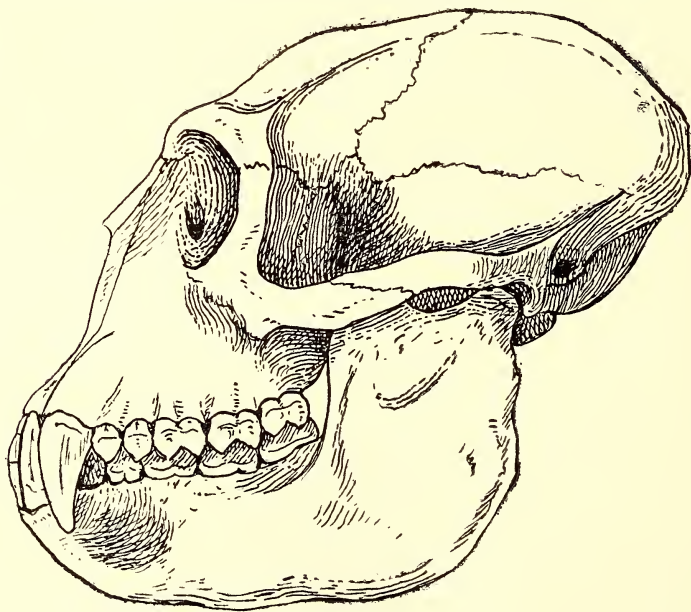
*Distribution.* Kumaon up to 6,000 feet.

In general coloration the known examples of this race closely resemble the specimen of *schistaceus* from Hazara Patherghatta described above. The skulls of adult females of the two are, however, different in dimensions and shape, those of *hector* being larger, with bigger teeth, less pronounced brows and more prominent nose. But additional specimens from the Terai Forest may prove *hector* to be identical with *schistaceus*, if the skulls are found to intergrade.

The following table gives the approximate dimensions in inches of the skins of this langur shot by C. A. Crump in November, January and February :—

Locality and Sex	Head and Body	Tail	Hind foot	Ear	Weight
Champawat, Almora, 6,000 ft., ♂ ...	27½+	39	9+	2—	...
Sitabani, Ramnagar 2,000 ft., ♂ ...	26	37	8½+	2—	38 lbs.
Dela, Ramnagar, 1,500 ft., ♀ ...	24+	33½—	7½+	1½	39 lbs.
Ratighat, Naini Tal, 3,700 ft., ♀ ...	23½+	33	8	2—	31 lbs.

The two males, it will be seen, are a little smaller than the adults from Chamba ; but the skulls show them to be rather younger animals.



A

FIG. 5A.—Skull of *Pithecus entellus ajax* from Chamba, ♂ ad.  
Two-thirds nat. size.

The skulls generally resemble those of *achilles* and *ajax*, but have the nose more prominent. This is particularly noticeable in the skulls of two adult females when compared with the skulls of adult females of *ajax* from Kangra. It is also observable in two male skulls. These also are narrower than the skulls of adult males of *ajax*; but they are younger, the basioccipital suture being still open. Their youth, no doubt, accounts for their narrowness; and probably increase in the size of the brow ridges with advance of years would lessen the appearance of prominence of the nose. (Text fig. 4A.)

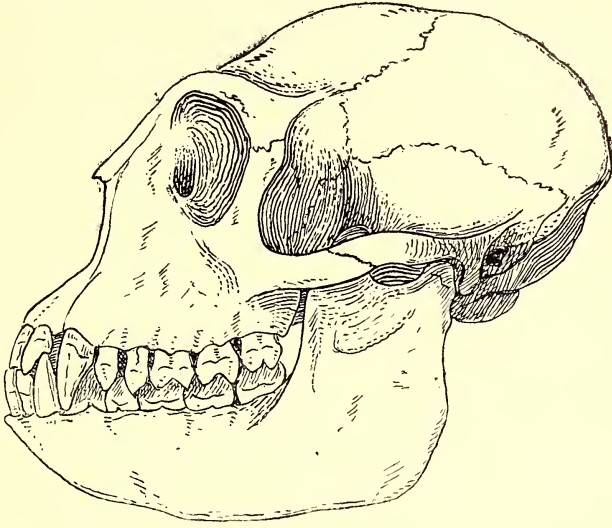


FIG. 4A.—Skull of *Pithecus entellus hector* from Naini Tal. ♀ ad.  
Two-thirds nat. size.

The dimensions in millimetres of four skulls are as follows :—

Locality and Sex	Total length	Length of Palate	Length of Upper Molars	Orbital width	Zygomatic width
Ramnagar ♂	135	50	3	77	96
” ♂	132	49	40	75	98
Naini Tal ♀	123	46	40	70	94
Ramnagar ♀	119	46	41	70	90

Several skulls of adult males from Garhwal, presented to the British Museum by B. B. Osmaston, may, for geographical reasons, be provisionally assigned to this race; but unfortunately there are no skins from this district of Kumaon by which the correctness of this inference can be tested. These skulls do not differ appreciably from those of *achilles* and *ajax*.

The Langurs recorded by Blyth on Hutton's authority as occurring in Mussoorie and Simla up to 11,000 feet and described by Hutton as dark greyish with pale hands and feet and white head, throat breast and tail-tip, certainly differ from *ajax* from Chamba, but appear to agree very closely with this Kumaon race, *hector*; and a number of skulls of adult males presented by Hutton to the British Museum, which may have been procured by him either at Simla or Mussoorie, are not distinguishable from the skulls of adult males of *ajax* and *achilles*. Nevertheless, as stated above, the skulls of adult females of *hector* from Kumaon have, owing to the prominence of the nose, a different appearance from adult female skulls of *ajax*.



Subspecies *entellus*, Dufresne.

(Plate II, fig. 3.)

*Simia entellus*, Dufresne, *Bull. Soc. Phil.*, Paris, 1, p. 49, 1797.*Sennopithecus* or *Presbytis entellus* of Blyth, Anderson, Blanford, etc.; and of Dollman, *Journ., Bom. Nat. Hist. Soc.*, xxii, No. 3, p. 438, 1913.

Smaller than the Himalayan races and distinguishable from them by the uniform coloration of the head and shoulders and by the sharp contrast between the black or brown and black hands and feet and the grey of the arms and legs below the elbows and knee. General colour of upper side darker or lighter shining sepia brown, becoming paler on the shoulders and head. Outer side of arms to, or almost to, the wrists and of the legs down to, and often including, part of the foot, much the same tint as the back, as also is the greater part of the tail; but the leg below the knee is generally paler and greyer and the end of the tail is usually nearly white. The whiskers, which do not conceal the ears, the throat, the chest, the belly, the inside of the limbs and the back of the thighs whitish or buffy-white.

*Distribution.* Northern parts of peninsular India south of the Ganges from Bengal westwards to Kathiawar and Guzerat.

The Mammal Survey secured a useful series of this langur from various localities ranging from Bengal, whence the original example came, westwards to Kathiawar and Guzerat. I have been unable definitely to establish the existence of local races over the whole of this area which is probably tolerably uniform in its physical features; but the series of skins as a whole shows that *entellus* is not nearly so sharply differentiated as is suggested by the writings of Blanford and other authors. Blanford, for instance, following Blyth and Anderson, lays great stress upon the uniform tint of the head and shoulders, involving the absence of a distinct pale cap on the crown, and the sharp contrast between the blackness of the hands and feet and the paler tint of the arms and legs. Both these features are, however, variable. In a series from Midnapore (200 feet), for example, the head is paler than the shoulders, but the tints blend on the nape; the hands and the feet are black in adult males but brown with black fingers and toes in a young male and adult females. Similar variation with age in the tints of the extremities is seen in other specimens. A female from Junagadh in Kathiawar is darker above than the Midnapore examples but has the feet grey with black toes and the hands and wrists black; and a female from Deesa in Palanpur is paler than the Midnapore series but this langur was shot in May when it was apparently still carrying its shaggy winter coat.

The following are the approximate dimensions in inches and the weights of a few specimens picked haphazard:—

Locality and Sex	Head and Body	Tail	Hind foot	Ear	Weight
Hazaribagh, 1,000 ft., ♂ ...	25½	42½	8¼	2	...
Midnapore, 200 ft., ♂	25	44	8½	1¾	35 lbs.
Hoshangabad, 3,300 ft., ♂	25	42½	8½	2	...
Chikalda, Berar, 366 ft., ♂	23½	42	8½	...	...
Junagadh, Kathiawar, 200 ft., ♂	23	37½	7½	1¾	...
Seonbadoh, Berar, 1,800 ft., ♀	25	37½	7¾	1¾	...
Midnapore, 200 ft., ♀	22½	38	7	1½	25 lbs.
Deesa, Palanpur, ♀	21½	35	7¼	1¾	...

These measurements bear out the statement made above regarding the comparative dimensions of *entellus* and the related langurs to the north of the Ganges. In connection with Blanford's statement that the ears of *entellus* are larger than those of *schistaceus*, it must be remembered that he was unacquainted with *schistaceus* in the restricted sense in which that term is used in this paper. The ears on dried skins of *entellus* look larger mainly because they are not concealed to the same extent by the whiskers. Nevertheless they are on the average a little larger than the ears of the races from the high Himalayas.

The skulls vary greatly in shape. Blanford's statement that the skull differs from that of the mountain forms he took for *schistaceus* in having the nose not projecting beyond a straight line tangential to the middle of the brows and the alveolar border of the incisor teeth is not true. In two female skulls from Hewra in Nimar and Seone, Malwa in the Central Provinces, the nose projects beyond that line. Similar variation in the shape of the cranial portion may be seen by a comparison between the figure of an adult male skull of *entellus* published by Blanford where the upper surface is low and flat, with a very long and projecting occipital region, and the skull of the adult male from Hazaribagh which is more steeply sloped. Of particular interest is the skull of an adult male from Deesa in Palanpur, which in its low facial portion recalls the skull of the South Indian and Ceylonese race formerly known as *priam* and described below as *pallipes*. Nevertheless, as Anderson pointed out, the skulls of *entellus* certainly differ on the whole from those of the northern mountain races in having the line of the face more vertical, with the nose and jaws less prominent. It also is a little smaller and has smaller teeth. But, as stated above, these differences will in all probability be found to break down when more is known of true *schistaceus* from the Nepal Terai. (Text figs. 5B, 6A, 6B, 7A and 9A.)

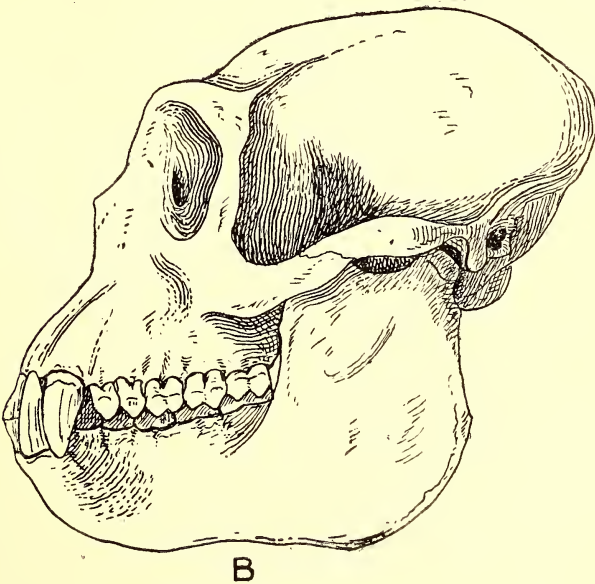
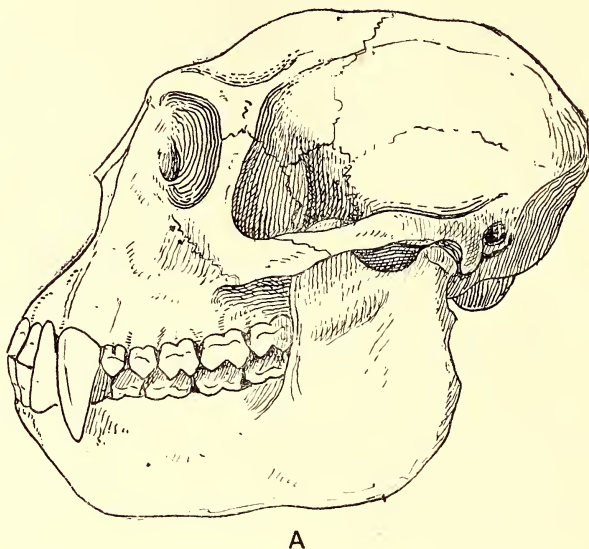
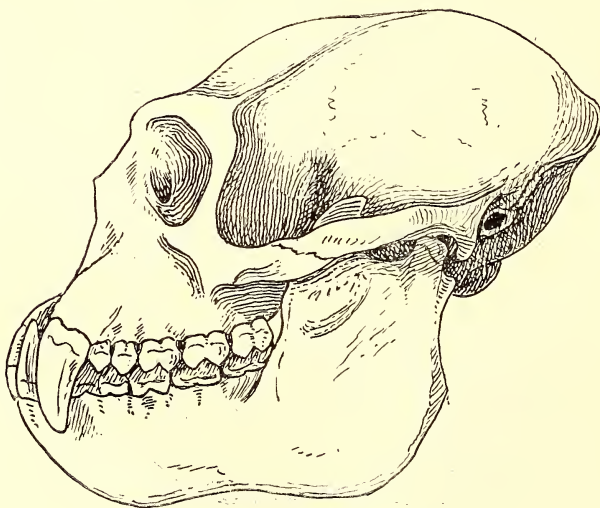


FIG. 5B.—Skull of *Pithecus entellus entellus* from Hazaribagh, ♂ ad.  
Two-thirds nat. size.



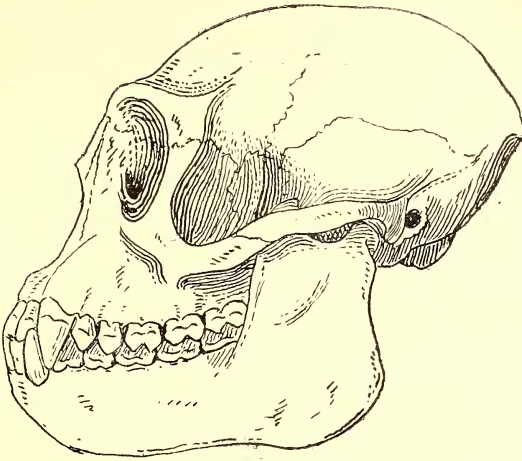
A

FIG. 6A.—Skull of *Pithecus entellus entellus* from Midnapore. ♀ subadult.  
Two-thirds nat. size.



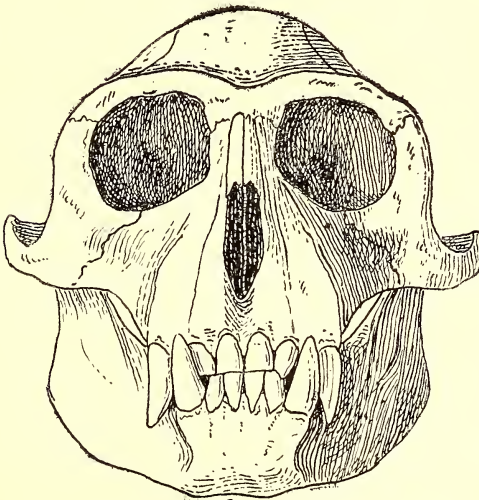
B

FIG. 6B.—Skull of *Pithecus entellus entellus* from Palanpur. ♂ ad.  
Two-thirds nat. size.



A

FIG. 7A.—Skull of *Pithecus entellus entellus* from Hoshangabad, ♀ ad.  
Two-thirds nat. size.



A

FIG 9A.—Skull of *Pithecus entellus entellus* from Midnapore, ♂ subadult.  
Two-thirds nat. size.

The following are the measurements in millimetres of some of the specimens :—

Locality and Sex	Total length	Length of Palate	Length of Upper Molars	Orbital width	Zygomatic width
Hazaribagh, ♂ ...	131	51	34	82	106
" " ♂	128	47	36	78	102
Bengal, ♂ ...	128	46	37	81	104
Deesa, ♂ ...	127	42	36	81	103
Midnapore, ♂ ...	123	46	36	74	92
Chikalda, ♂ ...	120	42	33	75	98
Junagadh,					
Kathiawar, ♂ ...	120	42	35	73	91
Midnapore, ♀ ...	110	36	34	67	89
Hoshangabad, ♀ ...	109	37	35	65	87
Junagadh, ♀ ...	106	37	33	72	88

With the exception of the second and third on the list, which were presented to the British Museum by Mr. W. Theobald, these skulls were collected by the Mammal Survey. The male examples from Midnapore and Junagadh are not quite fully developed.

Blyth (*Journ., As. Soc., Bengal*, xiii, p. 470, 1844 and xvi, p. 733, 1847) gave the name *anchises* to the skin of a Langur, from an unknown locality in the Deccan, which he described as like the darkest examples of *entellus* but with the hands mixed white and blackish, the feet whitish with dusky black above the base of the toes and on the terminal phalanges and the leg from the knee whitish. Coat generally much longer, the hair from 4 to 6 inches on the sides of the body and not wavy as in *entellus*; the toes having long hairs like those of a spaniel's paw.

Out of the very large number of *entellus* and *entellus*-like langurs in the British Museum procured by the Mammal Survey in India to the south of the Ganges, there is not one that exactly fits the description of *anchises*. Nearest to it comes a female, collected in November at Hewra (1,000 feet) in Nimar. This resembles *entellus* in the uniform tint of the head and shoulders; but the coat, as in *anchises*, is long, there are longish hairs on the toes and the feet are much paler, being grey, like the leg, with some black hairs on the knuckles. The hands, however, are not so pale as in the type of *anchises*; they are distinctly brown, that tint blending with the colour of the arm, and have black hair on the knuckles.

Very like this example from Nimar is one obtained by Mr. Prater at Lahi, Seone Malwa, in the Central Provinces; but the hands and feet are a little darker; and a second specimen from the same locality is still blacker on its extremities and is hardly different from *entellus* in that respect, but the head is paler than the shoulders as in the more southern races below recorded.

These specimens, with the type of *anchises*, are peculiarly interesting because they show a complete gradation in the colours of the hands and feet between *entellus* and the *entellus*-like form from Southern India and Ceylon usually cited as *priam* or *priamus* which is described below under the name *pallipes*. And the specimen with the darkest hands and feet and the paler head similarly reveals a gradation between *entellus* proper and the race next described.

The exact status of *anchises* must for the present be left unsettled. It may represent a distinct subspecies. At all events on the available evidence it cannot be assigned to typical *entellus*; and equally certainly it cannot be regarded as identical, as Blyth supposed, with the black-footed, black-handed forms of southern India. Conceivably it may represent a variety or sport of either.

#### Subspecies *achates*, nov.

*Semnopithecus anchises* var. Blyth, *Journ. As. Soc., Bengal*, xiii, p. 471, 1844.  
*Presbytis entellus anchises*, Dollman, *Journ. Bom. Nat. Hist. Soc.*, xxii, No. 3, p. 442, 1913. Not typical *S. anchises*, (cf. *supra*.)

*Semnopithecus hypoleucus*, Blanford, at least in part. Not *S. hypoleucus*, Blyth.

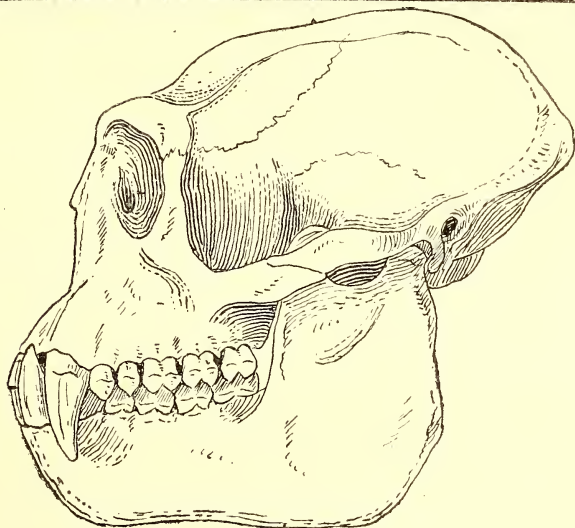
Closely related to typical *entellus* and intergrading with it, but with the buff or greyish-buff coloured crown of the head paler than the shoulders and differentiated in tint, although not so sharply differentiated as in the races to the north of the Ganges. Its hair also is more woolly. The general tint of the dorsal surface is on the average somewhat darker, the upper part of the cheek between the eye and the ear is tinged with blackish-grey and the black of the hands and feet is not so defined from the tint of the arms and legs owing to the somewhat darker hue of the lower half of these limbs, especially of the legs below the knees.

*Distribution.* Bellary, Dharwar and Kanara, from 1,500 to 2,000 feet in the Western Ghats; also Karwar, on the sea coast, to the west of the Ghats.

*Type.* Adult ♂ from Hausbavi, 2,000 feet, S.W. of Dharwar. B. M. No. 14.11.18.1.

The following are the measurements and weights of some of the specimens collected by Mr. Shortridge for the Mammal Survey :—

Locality and Sex	Head and Body	Tail	Hind foot	Ear	Weight
Vijayanagar, Bellary, 1,500 ft., ♂ ...	26½" —	40"	8½" +	2" +	35 lbs.
Hausbavi, S. Dharwar, 2,000 ft. ♂ ...	27" —	43" +	8"	2" —	30 lbs.
Devikop, 26 miles S. of Dharwar, 2,000 ft., ♂ ...	26½"	39½"	7½"	2" —	...
Samasgi, Kanara boundary, " ♂ ...	26"	38"	7½"	2" —	...
S. W. Dharwar, 2,000 ft., ♂ ...	24"	34"	7"	1½"	22¾ lbs.
" ♂ ...	24"	34"	7"	1½"	19½ lbs.
Vijayanagar, Bellary, 1,500 ft., ♀ ...	26"	35"	7½" —	2"	27 lbs.
Alnavar, Dharwar, ♀ ...	26"	34½"	7½" +	2" —	...
Devikop, 26 miles S. of Dharwar 2,000 ft., ♀ ...	25"	37½"	7½"	2" —	...
Hausbavi, S. Dharwar, ♀ ...	24½" —	33"	7"	1¾"	22½ lbs.
Samasgi, Kanara boundary, S. W. Dharwar, 2,000 ft., ♀ ...	22½" —	31½"	6½"	1½"	17 lbs.



B

FIG. 7B.—Skull of *Pithecus entellus achates* from Hausbavi. ♂ ad.  
Two-thirds nat. size.

Three examples collected at Potoli, N. Kanara (1,800 feet) are interesting. Two of them resemble typical *achates* in colour; but the third is darker, as dark as the two examples from Jog described below, and is in this respect a transitional specimen between the two races.

From Blyth's original description of *anchises* it is clear that he knew by hearsay from Elliot of the existence of *entellus*-like langurs to the south of the range of typical *entellus*. Although he did not know the exact locality of his type of *anchises*, he stated that that form represented *entellus* in the Deccan and along the foot of the Western Ghats. He also had a specimen from Coimbatore which he regarded as a probable variety of *anchises* from which it differed by having black hands and feet as in *entellus*. This langur no doubt belonged to the race here described as *achates*. It was probably Blyth's statement regarding the distribution of *anchises*, and not his description of it, that induced Dollman to identify as *anchises* the langurs here described as a new subspecies.

The skulls (Text fig. 7B) in form and also in individual variability are very like those of typical *entellus*, but are smaller, with a more vertical face, shorter jaws and smaller teeth. The measurements in millimetres of a few of them are as follows:—

Locality and Sex	Total length	Length of Palate	Length of Upper Molars	Orbital width	Zygomatic width
Hausbavi, ♂ ...	118	41	32	74	93
Samasgi, ♂ ...	116	37	30	66	87
Potoli, N. Kanara, ♂	112	40	34	70	91
Devikop, ♂ ...	112	38	32	70	—
Vijayanagar, ♀ ...	110	38	33	69	89
Alnavar, ♀ ...	110	39	31	68	84
Samasgi, ♀ ...	102	32	30	65	81
Karwar, ♀ ...	100	34	31	61	82

These measurements show that whereas the skulls of the males are on the average distinctly smaller than those of *entellus*, the skulls of the females are quite as big. The sexual difference, therefore, in *achates* is much less than in *entellus*. Since moreover, the body measurements of the males attest approximate equality in size between the males of *achates* and *entellus*, it is evident that the males of *achates* have a relatively much smaller head.

#### Subspecies *iulus*, nov.

Resembling and intergrading with *P. entellus achates*, but smaller and with closer, softer, less shaggy hair, and darker in tint, the back being deep brown, against which the pale buff coloured head shows up conspicuously. Cheeks with a considerable quantity of black hair between the eye and the ear, as in *achates*. Arms in the male black from the elbow outside, a little paler in the female. Legs deep greyish-brown outside. Tail blackish-brown with the terminal third whitish. Lower surface and inside of arms and legs pale as in *achates*.

*Distribution.* Jog, Gersoppa Falls on the Kanara-Mysore Boundary, 1,300 feet. (G. C. Shortridge).

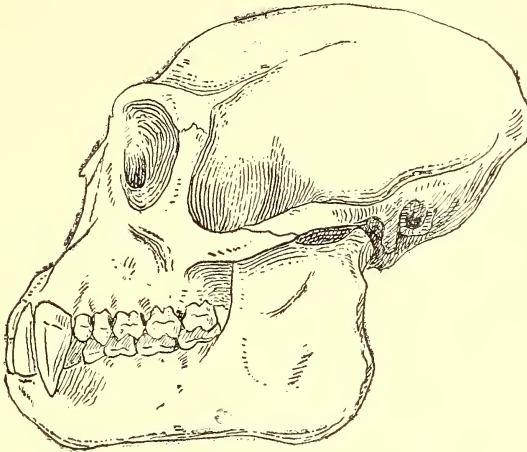
*Type.* ♂, B.M. No. 14.11.18.7.

The two adult examples collected at this locality give the following approximate measurements in inches:—

Sex	Hand and Body	Tail	Hind Foot	Ear	Weight
♂ ...	20½" +	34"	6½" +	1¾"	21 lbs.
♀ ...	20" +	36"	6¾"	1¾"	18½ "

Except for the conspicuous paleness of the head, this langur much resembles the race, *hypoleucos*, in the darkness of the back, the black tint of the arms

and the proximal two-thirds of the tail ; but in the paleness of the head, of the tip of the tail, the grey hue of the outer side of the legs and the absence of the blackness from the inner sides of the arms and legs it is like typical *achates*. And the interest of the specimens lies in the link they form in the chain between *hypoleucos* and *entellus*. (Text fig. 8A) hitherto regarded as well-defined species.



A

FIG. 8A.—Skull of *Pithecus entellus iulus* from Jog in Kanara. ♂ ad. Two-thirds nat. size.

The skulls measure, in millimetres, as follows :—

Sex	Total length	Length of Palate	Length of Upper Molars	Orbital width	Zygomatic width
♂	106	35	30	65	84
♀	103	36	31	63	85

Judging from the somewhat scanty material, there is scarcely any difference in size between the male and female of this race.

Subspecies *dussumieri*, Geoffr.

*Semnopithecus dussumieri*, I. Geoffroy, *C. R. Acad. Sci.*, xv, p. 719, 1842, and *Arch. Mus.*, ii, p. 538, pl. xxx, 1843.

Back greyish-brown ; crown of head, cheeks, neck and flanks yellowish ; outer surface of arm to the elbow a little darker than the back, from the elbow to the finger-tips black ; outer surface of legs to the ankle a little darker than the back, feet black ; tail black turning to greyish-brown in the terminal third ; under side and inside of limbs yellowish.

*Distribution.* Coast of Malabar.

Since the single known example of this langur was collected by a Frenchman, it probably came from Mahé, the French Colony in Malabar.

No langurs quite resembling this race, as described and figured, were collected by the Survey, those most like it being the specimens referred to *achates* and *iulus*. The latter, indeed, so far as it is possible to judge, only differs from *dussumieri* in being much darker on the back, which cannot be described as greyish-brown, and in having the upper part of the cheek or whiskers between the eye and ear washed with black pigment. Otherwise they appear to resemble one another in colour, particularly in the blackness of the arm below the elbow. Close resemblance to *dussumieri* is also shown by *achates*, but in



the latter the arm below the elbow is not black, being noticeably paler than the hand, the upper part of the cheek is dark and the basal two-thirds of the tail is not black. It may be added that *dussumieri* differs from *hypoleucos* in being much paler above and in having the area of the leg below the knee about the same tint as the back and not black. Yet in spite of these obvious differences between the description of *dussumieri* and the type of *hypoleucos*, which he had in his hands and described, Anderson quoted *dussumieri* as an unquestionable synonym of *hypoleucos*. Naturally his description of *hypoleucos* does not fit *dussumieri*. Blanford, on the other hand, gave a description of *hypoleucos* which fits *dussumieri*, but not the type of *hypoleucos*. Finally, Elliot's statement that the type of *dussumieri*, which he saw in the Paris Museum, agrees with his description of an apparently accurately determined specimen of *hypoleucos* from Travancore must be untrue, if any reliance is to be placed on Geoffroy's description and figure of *dussumieri*.

Subspecies *hypoleucos*, Blyth.

*Semnopithecus hypoleucos*, Blyth., *Journ. As. Soc., Bengal*, x, p. 839, 1841; also xiii, p. 470, 1844; and xvi, p. 733, pl. xxvi, fig. 1, 1847 (*Presbytis*). Anderson, *Zool. Res. Yunnan*, p. 20, 1878. Not *S. hypoleucos*, Blanford, *Mamm. Brit. India*, p. 33, 1888, or at least only in part.

Back and shoulders deep dusky brown, head and whiskers brownish-white, a little darker on crown; outer surface of arms to elbows and of legs to knees the same colour as the back but arms below the elbows and legs below the knees, including the hands and feet, black; tail also black. Sides and lower surface of body, inner side of arms to elbows and of legs to knees white; arms below elbows and legs below knees mostly black with some whitish hairs on the arms and on the front of the leg.

*Distribution.* Travancore.

No langurs exactly fitting this description, which is taken from Blyth's original diagnosis, were collected by the Mammal Survey. Blyth had one skin of an old male said to have come from Travancore and the dimensions he gave of the head and body, 21 inches, and of the tail, 32 inches, are probably only approximately correct. Nevertheless, Anderson, who extracted the skull from Blyth's type, stated that its total length is 106 mm., and since this type was an old male, it is clear that *hypoleucos* is a small race closely resembling in that particular the race from Jog described as *iulus*. It is also evidently very like *iulus* in colour especially in the blackness of the outer side of the arm below the elbow; but it differs from *iulus* in having the legs below the knees black outside and inside, with apparently more black on the inside of the arm below the elbow and a somewhat darker head.

Subspecies *æneas*, nov.

Evidently tolerably closely resembling *hypoleucos* but a larger and more heavily pigmented form. Back dark brown; the top of the head much darker than in *achates*, *iulus* and *priamellus* and not nearly so sharply contrasted with the shoulders but passing into reddish-buff in front. Arms very dark, deep brown close up to the body but black in front on the shoulder and from above the elbow to the finger-tips on the inner as well as on the outer side. Outer surface of legs like the arms, brown close to the hip but black in front and from above the knee to the tips of the toes, black also on the inner side up to the pubic region. Tail blackish throughout. Whiskers, throat, flanks and lower surface buffy or reddish-white, this hue also extending along the inner surface of the upper arm and obscurely down the middle of the pubic area between the thighs.

*Distribution.* S. Coorg from Makut, below the Ghats, 250 feet, to Wottekolli, 2,000 feet (G. C. Shortridge).

*Type.* Adult male from Makut, B.M. No. 14.11.18.23.

The description given above was taken from a sub-adult male from Makut and an adult female from Wottekolli. They resemble *hypoleucos* in general coloration but certainly differ from it in the blackness of the hairs on the inner side of the thigh making a sharp contrast with the white of the belly. A young male with the head and body 24 inches and the tail 32 inches is not so heavily pigmented on the limbs and in this respect comes nearer *hypoleucos*. The head of *æneas* also seems to be considerably darker than in *hypoleucos*; and the only

known example of the latter, an old male, is considerably smaller than the adult male of *æneas* as the following measurements show :—

Locality and Sex	Head and Body	Tail	Hind foot	Ear	Weight
Makut, 250 ft., ♂ ... ..	28"	37"	7"	1½"	25½ lbs.
Wottekolli, 2,000 ft., ♀ ... ..	25"	36"	6½"	1½"	22 lbs.

The skulls of these two adult examples measure, in millimetres, as follows :—

Sex	Total length	Length of Palate	Length of Upper Molars	Orbital width	Zygomatic width
♂	112	40	32	68	...
♀	106	38	32	66	86

It seems singular that two races of *Pithecus entellus* should occur in Coorg, namely, *elissa* at Nagarhole in the south-eastern part of the province and *æneas* at Makut and Wottekolli in the southern part, and both at nearly the same elevation. Nevertheless the two are readily distinguishable by their colour and it seems probable that *æneas* inhabits a zone with much heavier rainfall than *elissa*.

Subspecies *elissa*, nov.

*Presbytis entellus anchises*. Dollman, *Journ. Bomb. Nat. Hist. Soc.*, xxii, p. 494, 1913. Not *anchises*, Blyth.

Indistinguishable in general colour from some examples assigned to *achates* and no two of the four specimens examined exactly alike. But differing apparently from *achates* in having somewhat softer, silkier hair, a distinct tuft or crest on the crown of the head and in the uniformly white or whitish-tint of the cheeks, the dusky hue between the eye and the ear, present in *achates* and *inulus*, being absent.

*Distribution*. Nagarhole, S. E. Coorg (2,600 feet).

*Type*. Adult ♀, B. M. No. 14.11.18.16.

The chief interest of this form lies in the presence of the crest or tuft on the crown of the head, which was noticed by Mr. Shortridge, the collector, and is apparent on all the skins. A similar crest has hitherto been regarded, so far as the Indian and Ceylonese langurs are concerned, as distinctive of the race described below as *pallipes* and generally known as *priam* or *priamus*. I do not attach very much importance to this crest as distinguishing *elissa* from *achates*; but its development in *elissa* unquestionably lessens the systematic value that has been attached to the development of a similar crest in *pallipes* and it is worthy of special attention on that account alone.

The measurements in inches and the weight of two adult females and of an immature male are as follows :—

Sex	Head and Body	Tail	Hind foot	Ear	Weight
♂	24"	36"	7⅓"	1½"	20 lbs.
♀	25"	36½"	7"	1½"	23 lbs.
♀	24½"	31½"	6½"+	1½"	18¼ lbs.

The following are the dimensions of the skulls of the same specimens :—

Sex	Total length	Length of Palate	Length of Upper Molars	Orbital width	Zygomatic width
♂	105	35	32	63	...
♀	103	36	33	67	79
♀	99	34	30	65	81

In the skull of the male the canine and the last molar, although through the bone, are only half up; and since it may be assumed that the monkey was not full sized, the conclusion that *elissa* is about equal to *achates* in size is justifiable.

Subspecies *priamellus*, nov.

Colour of upper side sepia brown, similar to that of *achates*, but with the head and cheeks dirty white, without any dark pigment on the cheeks between the eye and ear, with the outer side of the arms and legs uniformly brown, about the same tint as the back, this colour blending with that of the hands which are not black and only slightly darker than the arm, while the feet are greyish-brown and the same colour as the leg below the knee, the tail being the same colour as the back with its terminal portion whitish. The back of the thighs, the whole of the underside of the body and the inside of the limbs clothed with white hairs.

*Distribution.* Shernelly in Cochin.

*Type.* Adult male, collected for the Survey by Mr. Riley O'Brien. B. M. No. 21.11.5.7.

One specimen only was obtained and no measurements were recorded.

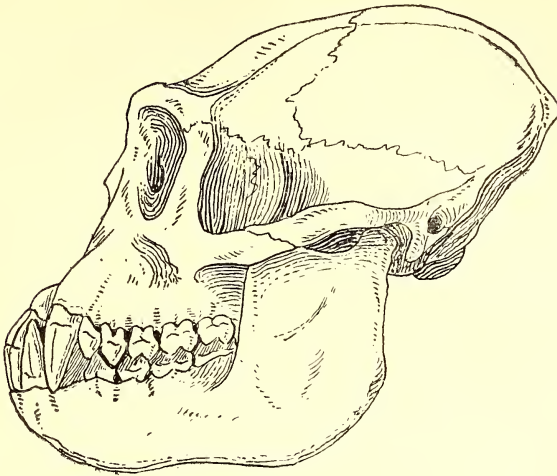
The chief interest of this specimen lies in the resemblance it shows to *achates* and *pallipes*. It approaches *achates* in the paleness of the head as compared with the back but differs in the absence of blackness from the hands and feet, and it resembles *pallipes* in the hands and feet being the same tint as the arm, and legs but differs in the colouring of the head. There is also no trace of a crest on the head.

The skull has prominent brows and the interorbital nasal region is concave, being vertical above and projecting below at an angle of about 135°; but the most noticeable peculiarity about the skull is the shape of the nasal orifice which instead of being long and narrow, as is typically the case in the other races of *entellus*, is wide, the width considerably exceeding half the greatest height. (Text figs. 8B and 9B.)

The dimensions of the skull are as follows :—

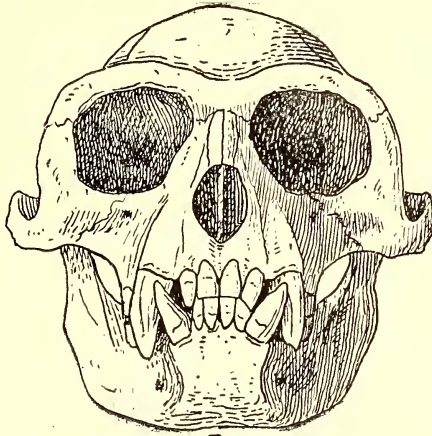
Total length	Length of Palate	Length of Upper Molars	Orbital width	Zygomatic width
105	38	31 +	69	82

Since the skull attests the full maturity of the specimen, it is clear that this race of langur is much smaller than *pallipes*, considerably smaller than *achates* and as large only as *ulus*; but from the structure of the skull and the colour of the hands and feet I am disposed to think this langur is more nearly related to *pallipes* than to *achates* or *ulus*.



B

FIG. 8B.—Skull of *Pitheculus entellus priamellus* from Cochin. ♂ ad.  
Two-thirds nat. size.



B

FIG. 9B.—Skull of *Pitheculus entellus priamellus* from Cochin. ♂ ad.  
Two-thirds nat. size.

Subspecies *pallipes*, Blyth.

*Semnopithecus pallipes*, Blyth, *Ann. Mag. Nat. Hist.*, p. 312, 1844 (April).  
*Semnopithecus priam*, Blyth, *Journ. As. Soc., Bengal*, xiii, pp. 470 and 476,  
1844 (after October).

*Presbytis priamus*, Blyth, *Journ. As. Soc., Bengal*, xvi, p. 732, pl. liv,  
fig. 1, 1847.

*Semnopithecus priamus*, Anderson, Blanford and most recent authors.

*Presbytis thersites*, Blyth, *Journ. As. Soc., Bengal*, xvi, p. 1271, pl. liv,  
fig. 3, 1847.

Tolerably closely resembling typical *entellus* in size and general colour, the back and outside of the limbs varying from uniform sepia brown to slaty-grey, the crown of the head being brown and hardly contrasted with the tint of the shoulders, although frequently contrasted with the whiter hue of the cheeks and

brow ; but the hands and the feet are practically the same colour as the arms and the legs and not blackened as in *entellus*. Also the hair of the crown is typically raised into a compressed crest or tuft. The tail is like the back in colour except its extreme tip which is grey or buff and the whole of the under side, the inside of the limbs and the backs of the thighs are white or whitish.

*Distribution.* Southern India, the Coromandel Coast from Nellore southwards, to, according to Blanford, Trivandrum and up the Nilgiri Hills to a height of 6,000 feet, as reported by Davison. Also Northern and Central Ceylon as far south as Trincomali and the Kandyan Hills.

In regarding this langur as a distinct species from *entellus*, Blanford relied, so far as external characters are concerned, upon the pale hands and feet and the presence of the crest on the head. But the importance of these characters is lessened by the presence of pale hands and feet in *priamellus* and in the form named *anchises* by Blyth, the presence of a similar crest in *elissa* from S.E. Coorg, and its absence in the Ceylonese examples of *pallipes* named *thersites* by Blyth.

The following table shows the approximate dimensions in inches and the weights of some of the specimens obtained by the Mammal Survey :—

Locality and Sex	Head and Body	Tail	Hind foot	Ear	Weight
Cheddikulum, Ceylon, ♂	25"	36"	7½"	2"—	29½ lbs.
" " " ♂	23¾"	32"	7½"	2"—	25¼ lbs.
Mahendragiri Range, S. Travancore, ♂ ...	23"	26"	7½"	2"	...
Mankeni, Ceylon, ♀ ...	20"	34¾"	6"	1½"	15 lbs.
" " " ♀ ...	20"	30"	6½"	1½"	13 lbs.

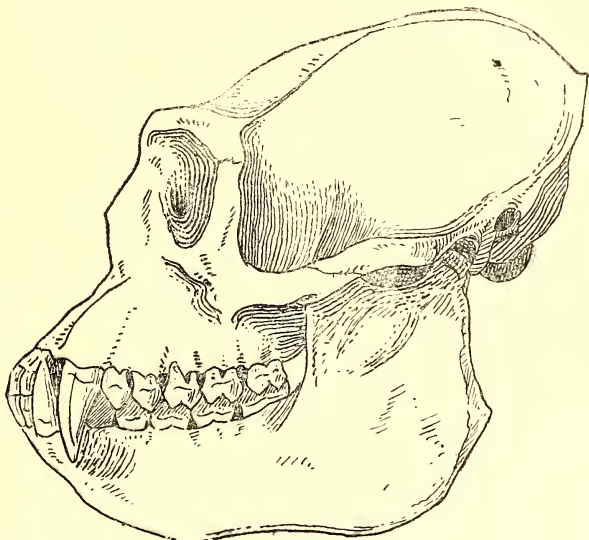
The Ceylonese examples were collected by Major E. W. Mayor in the northern and central provinces of the island, and the single example from S. Travancore by Mr. R. S. Pillay at Avambo at the foot of the Mahendragiri range.

These measurements show that the adult males are about the same size as *entellus* and *achates*, and suggest that the females are smaller ; but the two females measured are shown by their skulls to be scarcely full grown. Nevertheless, the skull of an adult female, recorded below, from the Nilgiri Hills, is considerably smaller than that of a male from the same locality, thus showing that in *pallipes* the sexual differences in size are as marked as in the skulls of typical *entellus*.

The measurements in millimetres of the available skulls are as follows :—

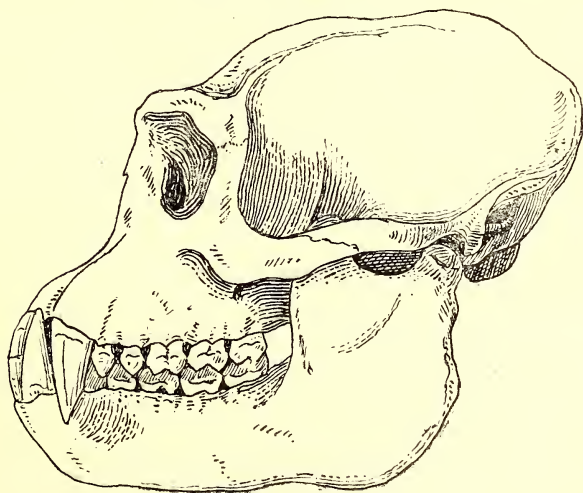
Locality and Sex	Total length	Length of Palate	Length of Upper Molars	Orbital width	Zygonatic width
Mahendragiri Range, ♂ ...	123	43	32	78	95
Nilgiri Hills, ♂ ...	122	45	34	78	97
Cheddikulum, ♂ ...	117	42	31	74	90
Nilgiri Hills, ♀ ...	100	36	30	65	82
Mankeni, ♀ ...	100	32	30	64	75
" ♀ ...	100	33	30	63	78
" ♀ ...	—	34	30	60	77

But the measurements convey no idea of the profound variation in the shape of the skulls. The skull of the adult male, collected by Davison in the Nilgiri Hills, which is certified by Thomas and Blanford to have been taken from the head-skin of a specimen of *pallipes* (*priani*), has the nose prominent, the back of the cranium high, the plane of the occiput steeply sloped and the lower jaw very massive, with the symphysis strongly inclined. But in the skull of the male from the Mahendragiri Range the nose is almost vertical, the back of the cranium is much less raised, the occipital plane is less steeply sloped, the lower jaw is less massive and its symphysis is more vertical. (Text figs. 10A and 10B.)



A

FIG. 10A.—*Pithecus entellus pallipes* from the Nilgiri Hills. ♂ ad.  
Two-thirds nat. size.



B

FIG. 10B.—*Pithecus entellus pallipes* from the Mahendragiri Range. ♂ ad.  
Two-thirds nat. size.

The female skull from the Nilgiri Hills (Davison) has the nose nearly vertical, the cranial portion short high and rounded and the lower jaw massive, whereas the female skulls from Mankeni in Ceylon have the facial portion less steep, the cranial portion lower and flatter, especially in one of the specimens and the lower jaw much less massive.

The skulls of adult males of *pallipes* differ from those of typical *entellus* in having the face lower and the upper jaw less massive; but they resemble in that respect, as stated above, the skull of an adult male of *entellus* from Deesa in Palanpur. This last-mentioned skull, indeed, is very like the skull of *pallipes* from the Mahendragiri Range except for the prominence of the nose, and in that respect it closely resembles the skull from the Nilgiri Hills.

The names *pallipes* and *priam* were given in the same year to this langur and Anderson, Forbes and Elliot, assuming apparently that *priam* was the first to be published, added *pallipes* to it as a synonym. But since *pallipes* was published in April and *priam* not until after October, it is clear that *pallipes* is the older name and by the law of priority must, if properly introduced, be adopted. Blanford omitted to quote it, possibly regarding the name as invalid. But Blyth applied *tallipes* to the 'reputed' Entellus monkey of Southern India which is quite different from the true *entellus*. Technically perhaps it may be claimed that this is not a description; but since Blyth had a skin and knew it came from Southern India, it is clear that by 'reputed' he meant 'so-called' and not 'surmised'; and what he said about this langur was quite sufficient to enable it to be identified with certainty. This apparently was the opinion of Anderson who quotes *pallipes* in the synonymy of *priamus* without any query as to the validity of the description or doubt as to the identity of the species. His verdict, being that of the first reviser, I have adopted.

The only other name to be considered is *thersites* given by Blyth to a langur from Nuera-Kalawa, west of Trincomalee in Ceylon, differing from *pallipes* (*priamus*) in having no crest on the crown. Blanford interrogatively added *thersites* to the synonymy of the Ceylonese langur *cephalopterus*, now known as *vetulus*; but Blyth was much too good a zoologist and knew the Indian langurs too well to have overlooked the very obvious differences between the *cephalopterus* and the *entellus* group of langurs; and it is quite clear from his figure and description of *thersites* that it belongs, as he said, to the latter category. It is most emphatically an *entellus*-like, not a *cephalopterus*-like monkey, and I have no doubt that it is identical with *pallipes* (*priam*), despite the absence of the crest. Kelaart also obtained a specimen in Ceylon without a crest.

Two langurs alleged to be representatives of these so-called species are figured side by side on Wolf's plate of Ceylon Monkeys in Tennent's *Natural History of Ceylon*, 1861. Wolf was a first-rate animal artist and his illustrations on this plate are so good that it may be inferred that they were drawn either from living specimens or skins. Now it is interesting to note that the top left-hand figure representing *thersites*, alleged to have no crest, has a crest as large as that in the Survey specimens, whereas the top right-hand figure, representing *priamus*, has a high peaked crest larger than in any example of this langur I have seen, although there is a good deal of individual variation in the size of the crest. I think it probable that the crest is actually or potentially present in all individuals of the race and that its occasional absence is due to moulting.

#### *Pithecus senex*, Erxleben.

*Cercopithecus senex*, Erxleben, *Syst. Regn. Anim.*, p. 24, 1777.

*Cercopithecus vetulus*, Erxleben, *tom. cit.* p. 25 (in part).

*Cercopithecus kephalopterus*, Zimmermann, 1780=*Presbytis*, *Semnopithecus*.  
*Pygathrix* or *Pithecus cephalopterus*, Anderson, Blanford, Elliot, Wroughton  
and others (in part).

*Pithecus vetulus*, Hinton, *Ann. Mag. Nat. Hist.* (9), xi, p. 506, 1923  
(in part).

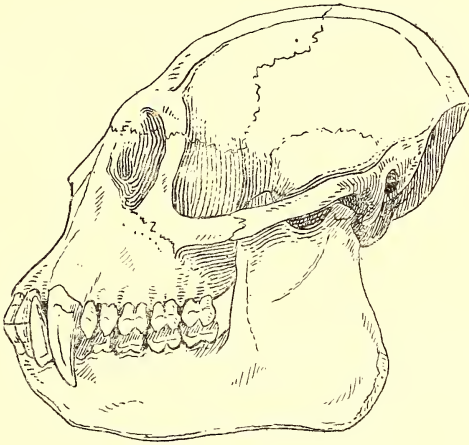
Resembling, except in albino specimens, the Langurs of the *Entellus*-group in the deep blackish-brown hue of the newly born young, but differing in the absence of the frontal whorl-like parting on the forehead, the presence of a patch of shorter paler hair upon the croup or loins, the black or brown tint of the under side and, usually at all events, in the presence in the female of a

white or whitish patch of varying extent on the pubic region below the callosities, and on the inner side of the thighs.

*Distribution.* Southern India and Ceylon.

The closeness of the affinity between the Langurs described below as subspecies of *Pithecus senex* was well-known to Blyth, Anderson and other authors. Hence the grouping of them under one specific name is not a novel idea, although most modern authors have followed Blanford in admitting three species.

The skulls, so far as my observations go, present a considerable amount of individual and but little subspecific variation. The sketch of the side view of the skull of *P. senex nestor* will give an idea of the general form. It will be noticed that the brows are not nearly so pronounced as in the subspecies of *Pithecus entellus*, so that the plane of the orbit is not vertical but inclined backwards. But the prominence of the brow and consequently the slope of the nose and the inclination of the orbit vary a good deal individually. (Text fig. 11A).



A

FIG. 11A.—Skull of *Pithecus senex nestor* from Panadura. ♂ ad.  
Two-thirds nat. size.

The skulls may be here dealt with comprehensively. There will be no occasion to do more than refer to them very briefly under the subspecific headings.

The following are the measurements in millimetres of a few :—

Locality and Sex	Total length	Length of Palate	Length of Upper Molars	Orbital width	Zygomatic width
<i>johnii</i> , ♂ (juv.), Cochin ...	108	32	30	65	80
<i>johnii</i> , ♀, Nilgiris.	108	36	31	64	83
<i>johnii</i> , ♀, Cochin.	95	30	30	...	...
<i>vetulus</i> , ♂, Anasigalla galla ...	103	34	26	61	74
<i>nestor</i> , ♂, Panadura dura ...	98	33	26	60	75
<i>nestor</i> , ♀, Panadura dura ...	94	32	26	60	72

These measurements suggest that the South Indian subspecies, *johnii*, has a considerably larger skull than the Ceylonese races *vetulus* and *nestor*; but I



have seen a male skull belonging to a form from Ceylon closely allied to *vetulus* and *nestor* which gave the following measurements:—Total length 109, length of palate 39, of upper molars 28, orbital width 65, zygomatic width 80.

KEY TO THE SUBSPECIES OF *Pithecus senex*.

- a* General colour white or whitish ... .. *senex*.  
*a*<sup>1</sup> General colour brown or black.  
*b* Crown and whiskers tolerably uniformly coloured buff or brown; the throat darker than the crown; general colour black; the tail also mainly black ... .. *johnii*.  
*b*<sup>1</sup> Crown and whiskers contrasted, crown brownish or buff, whiskers white or whitish; throat lighter than crown; tail greyish to brownish, not black.  
*c* Coat thick and shaggy; head and croup not sharply distinguished by colour from the back ... .. *monticola*.  
*c*<sup>1</sup> Coat shorter and smoother; head and croup more distinctly defined from colour of back in adult.  
*d* General colour black, with head darker but croup patch silvery grey ... .. *vetulus*.  
*d*<sup>1</sup> General colour brown, with head paler and croup patch grey to grey brown *nestor*.

Subspecies *senex*, Erxleben.

*Cercopithecus senex*, Erxleben, *Syst. Regn. Anim. Mamm.* p. 24, 1777.

*Semnopithecus senex*, Schlegel, *Mus. Pays Bas, Simiæ*, p. 53, 1876; Blanford, *Faun. Brit. Ind. Mamm.*, p. 35, 1888.

*Presbytis albinus*, Kelaart, *Prodrom. Faun. Zeyl*, p. 7, 1852; *id.*, *Journ. As. Soc.*, *Bengal*, xx, p. 182, 1852.

Fur dense, wavy, of a nearly uniform white colour, with only a slight dash of grey on the head; whiskers white, full and pointed laterally; hands and feet with long white hairs overhanging the tips of the fingers and toes. Face and ears black, eyes brown; palms and soles flesh-coloured.

*Distribution.* Ceylon, Matelle (Matale).

Erxleben gave the name *senex* to a white Ceylonese monkey referred to by Knox<sup>1</sup> as another sort of monkey, milk white both in body and face. This no doubt was a pure albino possibly, perhaps probably, belonging to one of the Ceylon races of Langurs recorded below; and since *senex* has page priority over *vetulus*, the former name must, according to the rule, be adopted, although it was unfortunately probably applied to a variety. The available evidence does not at present enable us to say to which, if to any, of the now well-known races *senex* should be applied. In adopting the name I have, therefore, followed Schlegel who seems to have been the first reviser to affix *senex* to a definite type of Langur from Ceylon. This was represented by a specimen brought by Temminck from that island and presented to the Leyden Museum. Schlegel described it as yellowish-white, washed with brown on the back and with red on the upper side of the head and nape. Blanford, who saw what was no doubt the same specimen in Leyden, endorsed, with unimportant modifications, Schlegel's description of the colour, adding that the face and ears were black, the palms and soles flesh-coloured, the fur dense and wavy, the whiskers full and the toes well haired. He compared its dimensions to those of *P. ursinus* (= *monticola*) and the thickness of the coat bears out the view that the two are similar. Although the blackness of the face and ears and the wash of colour on the head and back show that this specimen is not so complete an albino as the white

<sup>1</sup>*Historical Relation of Ceylon*, vol. i, Ch. VI, p. 25, 1681.